

REMARKS

The Applicant has now had an opportunity to carefully consider the Examiner's comments set forth in the Office Action that was mailed January 10, 2008. The allowance of claims 4-9 and the acknowledgement of allowable subject matter in claims 14 and 16-18 are noted with appreciation. Nevertheless, the rejections of claims 10-13, 15 and 19-23 are respectfully traversed.

The Office Action

In the Office Action that was mailed January 10, 2008:

claims 4-9 were allowed;

claims 14 and **16-18** were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims;

claims 10-13, 15 and **19-23** were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,612,793 to Ito et al. ("Ito") (note the Office Action refers to this patent as -- Akio -- at least once in the rejection).

The Present Application

Briefly, the present application is directed toward methods and systems for providing black and white copies of documents that were intended to be printed in color. More particularly, the methods and systems of the present application seek to preserve information that was encoded in the color of portions of, for example, a bar or pie chart image while, at the same time, minimizing changes to the image so that the methods and systems may be appropriately provided in a "walk-up mode" of, for example, a photocopier.

The color information is preserved by replacing it with a subtle pattern or texture. However, the pattern or texture is **only applied to portions of the image that conflict with other portions of the image**. That is, while there are millions of colors or shades of colors possible in a color image, a typical black and white printer might only be able to produce 256 shades of gray. Accordingly, many colors must be mapped or represented by any particular shade of gray. The methods of the present application look for colors in an image that would be mapped to the same shade of gray. When colors are found that would be mapped to the same shade of gray, **those colors are classified as conflicting**,

and the subtle texture or pattern is applied to only those portions of the black and white image associated with conflicting colors. Indeed, only some of the conflicting colors need receive a pattern or texture. For example, if an image includes two colors that would be mapped to the same shade of gray, only one of them need be modified to include a texture or pattern.

Accordingly, the method can be applied even to images that do not need the method, such as photographs, without noticeably distorting those images. Therefore, the method is appropriately applied in a "walk-up mode."

As recited in claim 10, the present application is related to an image processor operative to generate a single colorant version of a color image, the single colorant version including modulations **only where necessary** to distinguish **between conflicting colors**. The image processor includes an image analyzer operative to find and **classify conflicting colors** in the color image **as conflicting** and a gray scale modulator operative to add spatial modulations to single colorant versions **of only the conflicting colors** within the single colorant version of the color image.

The Cited Reference

In stark contrast, it is respectfully submitted that the cited reference to Ito discloses yet another example of an image processing apparatus that applies patterning to the black and white versions **of all** of the colors represented in a black and white version of an image. As explained at column 3, lines 9-11, the system of Ito detects color components of the color original by using a hue signal in order to **reproduce the color image in monochrome patterns**. Ito uses a histogram (e.g., Fig. 7 and Fig. 17) of filtered or smoothed image histogram data (e.g., Fig. 5) to find three hue ranges associated with three peaks (column 7, lines 1-3). If the histogram includes four or more peaks, the additional peaks are associated with one of the three bigger peaks. For example, if the fourth peak is between two other peaks, it is combined with the peak associated with the smaller range (column 7, lines 3-67). Once the three ranges (e.g., the hues between B and C, E and F, and H and I in Fig. 7 or between B and C, E and F, and C and I in Fig. 17) (column 7, lines 48-61) are determined, the hue thresholds are loaded into comparators associated with patterns and the image is scanned a second time (column 6, lines 5-15). Each pixel is compared to the

various **hue** thresholds to determine which range it is associated with (column 6, lines 13-31). That information is delivered to a selector which selects a pattern. The pattern data is output to a multiplier where it is multiplied by a value of a darkest portion of the pixel data (column 6, lines 31-40). Presumably, the result of that multiplication is used to drive a printing element. However, the applicant has been unable to find any discussion of this in Ito.

Contrary to the assertions of the Office Action, it is submitted that **Ito does not disclose** and image analyzer that is operative to find and classify **conflicting colors** or gray scale modulator operative to add spatial modulations to single colorant versions **of only the conflicting colors** within the single colorant version of the color image.

The Office Action Is Not Completely Responsive and Includes Clear Errors

Section 707.07(f) of the MPEP indicates that in order to provide a complete application file history and to enhance the clarity of the prosecution history record, an Examiner must provide clear explanations of all actions taken by the Examiner during prosecution of an application. Additionally, §707.07(f) indicates that where the Applicant traverses any rejection, the Examiner should, if he or she repeats the rejection, take note of the Applicant's argument and answer the substance of it.

It is respectfully submitted that the present Office Action does not take note of all of the Applicant's arguments and does not answer the substance of them.

For example, at the bottom of page 5, the Office Action characterizes arguments found on pages 3, 4 and 6 of Applicant's Response H as the assertion that Ito does not disclose an image analyzer that is operative to find and classify conflicting colors in a color image. **Notably, this reference skips over arguments made on page 5** of Applicant's Response H. For example, in response to the rejection of **claim 10**, the second paragraph on page 5 of Applicant's Response H points out that the cited portions of column 1 and 2 of Ito do not disclose or suggest a gray scale modulator that is operative to add spatial modulations to single colorant versions **of only the conflicting colors** within the single colorant version of the color image, as recited in **claim 10**. The Office Action does not respond to this argument. Therefore, the Office Action is not

completely responsive. Accordingly, on this point, no clear issue has been developed between the Examiner and the Applicant.

In this regard, MPEP §706.07 indicates that “**before final rejection is in order** a clear issue should be developed between the Examiner and the Applicant...the Applicant who is seeking to define his or her invention in claims that will give him or her the patent protection to which he or she is justly entitled should receive the cooperation of the Examiner to that end, and not be prematurely cut off in the prosecution of his or her application....The Examiner should never lose sight of the fact that in every case the Applicant is entitled to a full and fair hearing, and that a clear issue between the Applicant and Examiner should be developed, if possible, before appeal.”

Accordingly, it is respectfully submitted that the finality of the present rejection is premature because the Office Action is not fully responsive and **withdrawal of the finality of the rejections is respectfully requested.**

Furthermore, it is respectfully submitted that the Office does not respond to the argument that Ito does not disclose or suggest adding spatial modulation to the single colorant versions of only the conflicting colors, because the argument is correct, and Ito does not disclose or suggest at least this subject matter recited in **claim 10**. Assertions of the Office Action to the contrary represent **clear errors in fact.**

With regard to the Office Action characterizes as the Applicant’s argument that “Ito does not disclose an image analyzer that is operative to find and classify conflicting colors in a color image”, the Office Action, at the bottom of page 5 and top of page 6, makes certain assertions with regard to what Ito discloses. However, none of those assertions are that Ito discloses an image analyzer that is operative to find and **classify conflicting colors** in a color image. Accordingly, the continued rejection of **claim 10** represents a **clear error** of the Office Action.

Indeed, the concluding remarks found at the top of page 6 of the Office Action that: “Thus, the color discriminating unit of Ito is an image analyzer as it detects/find and classifies/sorts colors identified as being the same based on hue values.” falls short of an assertion that Ito finds and classifies conflicting colors. It is respectfully submitted that this concluding statement falls short of such an assertion because the Office recognizes that Ito **does not** disclose or suggest a

gray scale modulator operative to add spatial modulations to single colorant versions of **only the conflicting colors** within the single colorant version of the color image, as recited in **claim 10**. Accordingly, the continued rejection of **claim 10** represents a **clear error** of the Office Action.

Additionally, the Office Action does not address the arguments found on page 5 with regard to **claim 12**. Accordingly, it is respectfully submitted that the Office Action is not fully responsive, no clear issue with regard to **claim 12** has been established between the Examiner and the Applicant, and **the finality of the rejection of claim 12 is premature**. Accordingly, **withdrawal of the finality of the rejection is respectfully requested**.

Moreover, it is respectfully submitted that the Office does not respond to the assertion of the Applicant that the cited portion of column 7 of Ito does not disclose a conflicting color detector because the Office recognizes that assertions of the Applicant are correct.

With regard to **claim 13**, the Office Action dissects the argument of the Applicant as well as the recitation found in **claim 13** and only responds to a portion of that argument and a portion of that claim language.

Claim 13 recites --a color relationship discriminator operative to receive conflicting color classification information from the image analyzer and color image pixel information, the color relationship discriminator operative to determine a relationship between the color image pixel and the conflicting color--.

In contrast, the cited portion of column 6 of Ito indicates that: “the threshold values at positions C, B, F, E, I and H are respectively set in window comparators 301 to 306 for color selection (Fig. 3), in the order named by the CPU 126, as shown in Fig. 13. More specifically, the threshold values in the largest area 10 between the positions C and B, the threshold values in the second largest area between the positions F and E, and the threshold values in the third largest area between the positions I and H are respectively set in the window comparators. When the original 100 is read by the second scan operation, a hue signal from the hue detecting unit 123 is input to a color selecting unit 401. If the hue value of the hue signal is larger than the threshold value at the position C and is smaller than the threshold value at the position B, i.e., falls in the range of the hue values between positions B and C, both the window comparators 301 and 302 output “1”, while an output from a

corresponding AND gate 307 is set at “1”.”

It is respectfully submitted that Ito does not disclose or suggest that any of the information discussed in this cited passage is considered “conflicting color classification information”. Furthermore, it is respectfully submitted that nothing in Ito discloses or suggests that any of the thresholds to which the hue signal is compared are considered to be conflicting colors in the sense the phrase is used in the present application or in any other sense. Accordingly, the cited passage cannot disclose or suggest the color relationship discriminator operative to receive conflicting color classification information from the image analyzer and color image pixel information, the color relationship discriminator operative to determine a relationship between the color image pixel and the conflicting color, as recited in claim 3 and assertions of the Office Action to the contrary, including those found in the Response to Arguments section of the present Office Action, represent clear errors of fact.

The Office Action does not include a response to the arguments presented with regard to **claim 21**. Accordingly, the Office Action is not fully responsive, and the finality of the rejection of claim 21 is premature. Accordingly, withdrawal of the finality of the rejections is respectfully requested.

Additionally, it is respectfully submitted that the Office does not respond to the arguments made with regard to **claim 21** because the Office recognizes that those arguments are valid. Accordingly, the maintenance of the rejection of **claim 21** represents clear error.

Claim 23 recites examining the image to find conflicting colors further comprises examining the image to find color peaks in the image that have similar lightness (L*). In this regard, Applicants pointed out that the histograms of Ito depict pixel count versus **hue** and that Ito does not disclose examining the image to find color peaks in the image that have similar lightness. In this regard, the Response to Arguments section cites column 3, lines 7-5 of Ito, which concludes with an indication that “the meaning of the word “hue” used in the following description is different from the general meaning of the word”. However, even if Ito uses the word “hue” in a different way than the general meaning, that does not disclose or suggest that Ito uses the word “hue” to mean lightness.

Furthermore, at column 3, lines 46-50, Ito indicates that hue values, values ranging from “0” to “239”, with **blue (b)** serving as a starting point in **Fig. 4**, are

output to a FIFO memory 210. Accordingly, it is respectfully submitted that Ito indicates that Fig. 4 depicts hue values. Furthermore, it is respectfully submitted that Fig. 4 clearly depicts **hues** of cyan, yellow, and magenta as well as **hues** of R, G and B (i.e., red, green, and blue). Accordingly, the implied assertion of the Office Action that in Ito “hue” somehow means --lightness-- represents a **clear error of fact**. Accordingly, the rejection of **claim 23** is based on **clear error of fact**.

For at least the foregoing reasons, as well as the reasons presented in Applicant’s Response H and repeated herein below, the rejections are based on **clear errors which would be identified in a PreAppeal Brief Request for Review**. Accordingly, reexamination, reconsideration and withdrawal of the rejections is respectfully requested. Additionally, for the foregoing reasons, the present Office Action is not fully responsive and the finality of the rejections is premature. Accordingly, **withdrawal of the finality of the rejections** and a fully responsive Office Action is respectfully requested.

The Claims are not Anticipated

It is respectfully submitted that to anticipate a claim, the reference must teach every element of the claim (MPEP §2131): “The identical invention must be shown in as complete detail as is contained in the...claim.” “The elements must be arranged as required by the claim”. (MPEP §2131)

It is respectfully submitted that in the present case every element of independent **claims 10 and 21** cannot be found, either expressly or inherently described in Ito. Ito does not show the identical invention in as complete detail as is contained in the claims, and Ito does not disclose the elements of the claims arranged as required by the claims.

For the foregoing reasons, **claims 10-13, 15 and 19-23** are not anticipated by Ito.

For example, **claims 10-13, 15 and 19-23** were rejected under 35 U.S.C. §102(b) as being anticipated by Ito. However, it is respectfully submitted that these rejections are based on **clear error**.

For instance, in explaining the rejection of **claim 10**, the Office Action cites portions of columns 3 and 4 and implies that the cited portions disclose an image discriminating unit that detects color components, which are accumulated in a

histogram and classified based on a threshold of hue values. However, even if those assertions are correct, none of that discloses or suggests an image analyzer that is operative to find and classify conflicting colors in a color image. Ito does not disclose or suggest looking for, finding and classifying conflicting colors. It is respectfully submitted that Ito applies some pattern to the black and white versions of **every color** in an image.

Further in regard to **claim 10**, the Office Action asserts that Ito discloses the gray scale modulator operative to add spatial modulations to single colorant versions of only the conflicting colors within the single colorant version of the color image and cites column 1, lines 20-27 and column 2, lines 48-54 in support of this assertion. However, the cited portion of column 1 discusses a method wherein, first, the color information of an original is converted into color signals by a photoelectric conversion element such as a color CCD or the like. Areas which are determined on the basis of these color signals to have the same color are replaced with a predetermined pattern such as a dot, horizontal line, or wavy line pattern corresponding to the color. This pattern is then reproduced in a single color to reproduce a monochrome image, thereby realizing a visual effect similar to that obtained by reproducing a color image.

The cited portion of column 2 indicates that in a data processing unit, the colors of the image data are discriminated on the basis of digital signals and are converted into patterns corresponding to the respective colors. The respective patterns are converted into density data by a LOG conversion unit to be reproduced as a monochrome image by a printer.

It is respectfully submitted that nothing in the cited portions of column 1 and column 2 discloses or suggests adding spatial modulations to single colorant versions of only the conflicting colors within the single colorant version of a color image.

For at least the foregoing reasons, the rejection of **claim 10**, as well as **claims 11-13, 15** and **19-20**, which depend therefrom, are based on **clear errors of fact** and **claim 10** as well as **claims 11-13, 15, 19** and **20** are not anticipated by Ito.

Additionally, **claim 10** has been amended to recite *inter alia*: “an image analyzer operative to find and classify conflicting colors in the color image as conflicting colors.”

Even if Ito could be construed as disclosing an image analyzer operative to find and classify conflicting colors in an image, it is respectfully submitted that Ito cannot be construed as disclosing an image analyzer operative to find and classify conflicting colors in the color image as conflicting colors.

It is respectfully submitted that this amendment to **claim 10** is supported throughout the specification including, for example, allowable **claim 4** which recites classifying peaks within the histogram that have similar luminance as conflicting colors. Furthermore, it is respectfully submitted that one of ordinary skill in the art would have understood that "as conflicting colors" was implied in claim 10 before the amendment. It is respectfully submitted that because the subject matter is clearly recited in allowable **claim 4** and implied in **claim 10** prior to amendment, the amendment to **claim 10** does not require a new search and should be entered. Furthermore, even if the amendment is deemed to require a new search, the amendment should be entered because it places the claim in a better form for appeal. Additionally, the finality of the present rejections is premature as explained above, and withdrawal of the finality is respectfully requested.

For the foregoing additional reasons, **claim 10**, as well as **claims 11-13, 15 and 19-20**, which depend therefrom, are not anticipated by Ito.

With regard to **claim 12**, the Office Action asserts that column 7, lines 1-4 and 15-20 disclose a conflicting color detector.

However, column 7, lines 1-4 indicate that in the embodiment described above, patterning is performed with respect to three hue ranges, i.e., ranges having three peaks, in a histogram. If, however, a hue value histogram of an original image has four peaks, as shown in Fig. 17, patterning is not performed with respect to a hue range between positions L and K.

Lines 15-20 indicate that since the processing in steps S10 to S40 are described above, a detailed description thereof will be omitted. In steps S20 to S40, a peak, i.e., a maximum value, in a hue value histogram is detected. In addition, processing of detecting the range of the peak, i.e., a minimum value, is performed. When all the peaks to be detected, i.e., the maximum values, are detected by repeating this processing (step S60), the maximum value and minimum value detection processing is terminated.

It is respectfully submitted that nothing in these cited portions of column 7

discloses a conflicting color detector. Furthermore, nothing in the cited portions discloses evaluating histogram peaks to determine similarity, as suggested by the Office Action. Moreover, even if the cited portions of column 7 could be construed as disclosing evaluating histogram peaks to determine similarity, as asserted by the Office Action, nothing in that alone would disclose or suggest a conflicting color detector. It is respectfully submitted that Ito applies a pattern to all colors in an image and does not search for conflicting colors and does not restrict patterning to only conflicting colors.

For at least the foregoing additional reasons, it is submitted that the rejection of **claim 12** is based on clear errors of fact and **claim 12** is not anticipated by Ito.

With regard to **claim 13**, the Office Action cites portions of columns 4-6. However, nothing in column 6, lines 5-20 discloses or suggests a color relationship discriminator operative to receive conflicting color classification information from an image analyzer. Furthermore, the thresholds referred to in the cited portions of columns 4 and 5 simply identify the ranges of colors that will be associated with one of three peaks or most common colors and therefore with pattern assignments. Nothing in column 4, line 65 - column 5, line 5 discloses or suggests a color relationship discriminator operative to determine a relationship between the color image pixel and the conflicting color.

For at least the foregoing additional reasons, the assertions of the Office Action with regard to **claims 13** represent clear errors of fact and **claims 13**, as well as **claims 14-18**, which depend therefrom, is not anticipated by Ito.

With regard to independent **claim 21**, the Office Action at once asserts that Ito discloses examining the image to find conflicting colors in the image and then, in an apparent acknowledgement that Ito makes no such disclosure, summarizes the cited portion of Ito as disclosing determining the brightness data; and using the brightness data and the histogram peaks in determining which pixels to apply a pattern.

However, even if the assertion of the Office Action were correct (which is disputed) even the summary provided by the Office Action of the disclosure of Ito does not disclose or suggest examining an image to find conflicting colors. Furthermore, the assertion that Ito discloses “determining which pixels to apply a pattern” is respectfully traversed. Nothing in Ito discloses or suggests anything

other than applying a pattern to all pixels. As depicted in Fig. 7 and Fig. 17 and the text associated therewith, Ito associates every pixel in the image of Ito with one of three ranges associated with one of three peaks and each of those peaks is associated with a pattern (e.g., column 6, lines 5-67).

Additionally, column 6, lines 12-20 and 29-35 do not disclose suggest selectively spatially modulating a portion of the single colorant version of the image that is associated with one of the conflicting colors as was recited in **claim 21**.

For at least the foregoing reasons, **claim 21**, as well as **claims 22-23**, which depend therefrom, are not anticipated by Ito.

Additionally, **claim 21** has been amended to recite *inter alia*: selectively spatially modulating **only portions** of the single colorant version of the image that are **associated with selected ones of the conflicting colors**. It is respectfully submitted that this amendment is supported throughout the specification including, the recitation in allowable **claim 4** of --applying at least one distinct spatial modulation to, and only to, at least one respective single colorant version of at least one of the conflicting colors in a single colorant version of the image. Since the subject matter of the amendment is included in allowable **claim 4**, it is respectfully submitted the amendment to **claim 21** does not require a new search. Accordingly, the amendment should be entered. Furthermore, even if the amendment is deemed to require a new search, the amendment should be entered because it places the claim in better form for appeal. Additionally, the finality of the present rejections is premature as explained above, and withdrawal of the finality is respectfully requested.

It is respectfully submitted that Ito does not disclose or suggest selectively spatially modulating **only portions of the single colorant version of the image that are associated with selected ones of the conflicting colors**. Ito does not disclose or suggest identifying conflicting colors and Ito does not disclose or suggest modulating **only portions** of the single colorant version of the image that are **associated with selected ones of the conflicting colors**.

For at least the foregoing additional reasons, **claim 21**, as well as **claims 22-23**, which depend therefrom, is not anticipated by Ito.

With regard to **claim 23**, the Office Action asserts that Ito discloses examining the image to find color peaks in the image that have similar lightness

and cites portions of column 3 and 7 in support of this assertion.

However, Ito does not disclose examining the image defined color peaks in the image that have similar lightness. It is respectfully submitted that the histograms of Ito depict pixel count versus **hue**. The cited portion of column 3 makes this abundantly clear. The cited portion of column 7 reads as follows: "Figs. 18A and 18B are flowcharts showing a procedure for determining threshold values." Since the processing in the steps S10 to S40 are described above, a detailed description thereof will be omitted. In steps S20 to S40, a peak, i.e., a maximum value, in a **hue** value histogram is detected. In addition, processing of detecting the range of the peak, i.e., a minimum value, is performed. When all the peaks to be detected, i.e., the maximum values, are detected by repeating this processing (step S60), the maximum value and minimum value detection processing is terminated, and it is checked whether the number of peaks is larger than three (step S61).

Clearly, the peaks referred to in the cited portion are related to a number of pixels associated with particular hue and **Ito does not disclose or suggest** examining the image to find conflicting colors by examining the image defined color peaks in the image that have similar lightness.

For at least the foregoing additional reasons, the rejection of **claim 23** is based on clear errors of fact and **claim 23** is not anticipated by Ito.

CONCLUSION

Claims 1-3 were withdrawn with traversal. **Claims 4-23** remain in the application. **Claims 4-9** have been allowed. **Claims 14** and **16-18** have been identified as including allowable subject matter. **Claims 10** and **21** have been amended. For at least the foregoing reasons, **claims 10-13, 15** and **19-23** are also allowable and the application is in condition for allowance. Accordingly, an early indication thereof is respectfully requested.

No additional fee is believed to be required for this Amendment I. However, the undersigned attorney of record hereby authorizes the charging of any necessary fees, other than the issue fee, to Xerox Deposit Account No. 24-0037.

In the event the Examiner considers personal contact advantageous to the

disposition of this case, he/she is hereby authorized to call Joseph D. Dreher, at Telephone Number (216) 861-5582.

☒ Remaining Claims, as delineated below:

(1) FOR	(2) CLAIMS REMAINING AFTER AMENDMENT LESS HIGHEST NUMBER PREVIOUSLY PAID FOR		(3) NUMBER EXTRA
TOTAL CLAIMS	23	- 23 =	0
INDEPENDENT CLAIMS	4	- 4 =	0

☒ This is an authorization under 37 CFR 1.136(a)(3) to treat any concurrent or future reply, requiring a petition for extension of time, as incorporating a petition for the appropriate extension of time.

☒ The Commissioner is hereby authorized to charge any filing or prosecution fees which may be required, under 37 CFR 1.16, 1.17, and 1.21 (but not 1.18), or to credit any overpayment, to Deposit Account 24-0037.

Respectfully submitted,

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CERTIFICATE OF MAILING OR TRANSMISSION

Under 37 C.F.R. § 1.8, I certify that this Amendment is being

- ☐ deposited with the United States Postal Service as First Class mail, addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date indicated below.
- ☒ transmitted to the USPTO by electronic transmission via EFS-Web on the date indicated below.
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